

In the Drawings

Please replace Fig. 6 of the drawings as detailed in the replacement sheet of the drawing, in which indications of reference numerals are corrected in accordance with the exemplary embodiment of the invention as shown and described.

Remarks

The application has been reviewed in light of the Office Action mailed January 4, 2006. The claims, specification, and drawings are amended by the foregoing Amendments. Claims 1-20 are pending in the application, and supports for the amendments can be found from throughout the drawings, specification, and claims as originally filed. Reconsideration of the Office Action is earnestly requested in view of the foregoing Amendments and following Remarks.

The drawings are objected to under 37 CFR 1.83(a) as being failed to label the related boxes in Figures 1-6 as described in the specification. Applicant carefully reviewed the application, and by the foregoing Amendments Fig. 6 and paragraphs [00034] and [00035] of the specification are amended to correct the above and other informalities. Accordingly, Applicant submits that this objection in the drawings has been overcome.

The Examiner has provisionally rejected claims 1-20 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/899,480. The copending Application No. 10/899,480 is filed on July 26, 2004, which is later than the filing date of the present application, and not yet subjected to any substantive examination. Accordingly, Applicant respectfully requests that this double patenting issue be considered later in this application or in the 10/899,480 application when patentability of the later is subsequently considered by further examination.

The Examiner has rejected claims 1-20 under 35 U.S.C. 103(a) as being unpatentable over EP 0776807 or EP 0831383. The Examiner has also rejected claims 1-20 under 35 U.S.C. 103(a) as being unpatentable over Hilberer (US Pat. No. 6,540,308 B1).

Claims 1, 14, and 17 are amended by the foregoing amendments in order to better highlight novel aspects of the present invention. As recited in the independent claims 1, 14, and 17 as amended, the present invention as claimed in claims 1-20 particularly requires, among other limitations, that an electronic control unit is designed and arranged to control the at least one valve of the pressure control unit, the at least one valve of the air dryer, the at least one valve of the multi-circuit protection valve, and the at least one valve of the air suspension system in which this valve controls operation of the air suspension system. As such, the claims of the present invention particularly requires that the electronic control unit controls, among others, the at least one valve of the air suspension system for controlling operation of the air suspension system.

According to the specification of the present application, this common electronic control unit fulfills the functions required to process compressed air as well as the functions of supplying and controlling the air suspension system. In this way not only the space required, but also the number of electric and pneumatic connecting lines and conduits is reduced. The spaced apart arrangement known in prior art as cited by Applicant is abolished, and it is now possible to arrange the elements of the common electronic control unit at reduced space requirement.

Referring first to Hilberer (US 6,540,308 B1), this reference discloses a compressed-air processing system for supplying circuits K1 to K4 with pressured air. An internal CAN 24 is connected to the electronic control unit 25 and is connected by way of a CAN data bus line 26 to the CAN network pertaining to the motor vehicle (column 7, lines 31 to 34).

The electronic control unit 25 interacts:

- with the pressure regulator solenoid valve 2 (column 7, lines 61 to 64), pressure sensors 6b-9b (column 7, line 51),

- data as pressure valves in the service brake circuit and similar data detected by the electronic control system 25 to additional electronic control systems installed in the motor vehicle (column 7, lines 34 to 38),
- the solenoids 6c-9c (column 7, line 54), and
- a solenoid valve 6c (column 6, line 24).

The scope of the control unit is to guarantee that the circuits K1 to K4 are supplied with air at the right pressure and the desired low humidity. The circuits K1 and K2 are used for the compressed-air supply of service brake circuits. A parking brake system is connected to circuit K3, while circuit K4 is provided for the connection of accessories (column 6, lines 8 to 13).

The only disclosure concerning an air suspension system is given in column 9, lines 17 to 37:

“An air suspension marked LF of the truck is also connected to the pressure regulator output hole 22 and can be locked by an electromagnetic overflow valve 4. The electronic control system 25 can provide, for example, that the overflow valve blocks the compressed-air suspension LF from the supply with compressed air from the pressure regulator output pipe 22 until a pressure sensor 30 arranged therein indicates that a pressure value has been reached which corresponds to a minimum pressure of the supply circuit. ...In this matter, it is ensured that, only after the built up of a minimum pressure in the pressure regulator output hole 22, by which the supply hole 32 and the useful circuits K1-K4 are also supplied, has been concluded, compressed air is used for the air suspension LF. Subsequently, the pressure in the pressure regulator output hole 22 can be further increased.”

In this regard, the Examiner states that “Hilberer’s teaching concerns an air suspension system as noted in column 9, lines 17 to 37: “An air suspension marked LF

of the truck is also connected to the pressure regulator output hole 22 and can be locked by an electromagnetic overflow valve 4." The Examiner, further concludes that Hilberer's teaching is at least fully functionally equivalent to the claimed invention and would have been obvious to one of ordinary skill in the art at the time of the invention because Hilberer teaches all of the structural features in order to achieve the same end result of processing compressed air for a motor vehicle.

Applicant respectfully disagrees. As discussed above, the Hilberer document only mentions an interaction of the control unit with the overflow valve 4 in order to supply air to the air suspension system. According to Hilberer, the control unit and the overflow valve 4 do not interact in order to influence the air suspension system itself but work independently on the driving conditions and the load conditions of the vehicle. Accordingly, in Fig. 3 of Hilberer, the air suspension system marked with LF is drawn as an independent consumer additionally to the circuits K1-K4. The circuits K1-K4 and the air suspension system LF are drawn outside the box that surrounds both the control unit 25 and the related pneumatic elements indicating the interaction between the control unit and the related elements. As such the overflow valve 4 is definitely not part of the air suspension LF, but is a separate and independent part located upstream of the air suspension LF which does not control operation of the air suspension system by controlling the at least one valve of the air suspension system. In other words, the valve 4 is used to supply the air suspension system with air but has nothing to do with controlling the air suspension system itself.

Therefore, in view of the foregoing Hilberer fails to disclose or suggest that the electronic control unit controls, among others, the at least one valve of the air suspension system in which the valve controls operation of the air suspension system, as required by the claims of the invention. In summary, Hilberer does not show more features than the prior art cited in the specification of the present application. However, the Hilberer document is another proof for the patentability of the present invention showing that according to the prior art it was common to build up separate control

systems for air processing systems and air suspension systems. Accordingly, claims 1-20 of the invention are patentably distinct over Hilberer.

With respect to the above-stated 103(a) rejection based on EP 0 776 807, the above arguments and reasoning in connection with Hilberer can be also applied to this reference. EP 0 776 807, in column 7, lines 1-5, discloses that there might be a reservoir 47 connected with an air suspension system of a vehicle. However, similar to the Hilberer reference, the air suspension system is a separate part (not shown in the figures) and being located downstream from the reservoir 47. All the valves located upstream of the reservoir 47 are not part of the air suspension system and are not controlled by a common electronic control unit.

With respect to the above-stated 103(a) rejection based on EP 0 831 383, the above arguments and reasoning in connection with Hilberer can be also applied to this reference. EP 0 831 383 discloses a compressed air processing system for an air supply to reservoirs for vehicle brake systems. However, an air suspension system is not mentioned or described at all both in the specification and the figures this reference. (An air suspension system could maybe be connected to the reservoir 40 but this is not mentioned or shown in EP 0 831 383. Additionally, any connection of the control unit 18 to an added air suspension system cannot be taken from EP 0 831 383.)

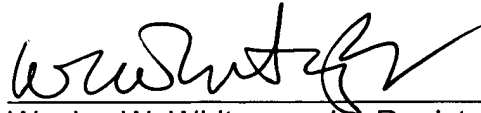
As discussed above, either EP 0 776 807 or EP 0 831 383 fails to disclose or suggest that the electronic control unit controls, among others, the at least one valve of the air suspension system in which the valve controls operation of the air suspension system, as required by the claims of the invention. The cited references per se or in combination do not show the feature that the air processing system and the air suspension system are controlled by a common control unit so that patentability of the present invention should be given. Accordingly, claims 1-20 of the invention are patentably distinct over the cited references.

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Response to Official Action

Accordingly, applicant respectfully submits that all of the claims currently pending in the application (i.e., claims 1-20) are in condition for allowance. Reconsideration and early notice to that effect is earnestly requested.

Respectfully submitted,

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Fig. 6

